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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,442	09/26/2003	Chandandumar Aladahalli	DB001050-001	8430

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EXAMINER
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HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
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2129

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/14/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/672,442

**Applicant(s)**

ALADAHALLI ET AL.

**Examiner**

Joseph P. Hirl

**Art Unit**

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This Office Action is in response to an AMENDMENT entered February 15, 2007 for the patent application 10/672,442 filed on September 26, 2003.
2. All prior office actions are fully incorporated into this Office Action by reference.

### ***Status of Claims***

3. Claims 1-44 are pending in this application.

### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-44 are rejected under 35 U.S.C. § 101 for nonstatutory subject

matter. The computer system must set forth a practical application of § 101 judicial

exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-

77. The invention is ineligible because it has not been limited to a substantial practical application.

In determining whether the claim is for a “practical application,” the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather that the final result achieved by the claimed invention is useful, tangible and concrete. If the claim is directed to a practical application of the § 101 judicial exceptions producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S. C. § 101.

The invention must be for a practical application and either:

- 1). specify transforming (physical thing – article) or
- 2). have the Final Result (not the steps) achieve or produce a  
useful (specific, substantial and credible),  
concrete (substantially repeatable / non unpredictable), and  
tangible (real world / non abstract) result  
(tangibility is the opposite of abstractness).

A claim that is so broad that it reads on both statutory and non-statutory subject matter, must be amended, and if the specification discloses a practical application but the claim is broader than the disclosure such that it does not require the practical application, then the claim must be amended.

Claims that cite “performing a pattern search, characterized by driving the search with a metric other than step size,” “determining the effect of a plurality of moves on a set of components,” and ranking includes one of analytically, probabilistically and heuristically ranking” are not statutory.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Lundahl et al (USPN 6,636,862, referred to as **Lundahl**).

**Claims 1, 23**

Lundahl anticipates performing a pattern-based search, and outputting a result of said pattern-based search, said method characterized by driving the search with a metric other than step size (**Lundahl**, c 38:19-54; Examiner's Note (EN): ¶ 13 applies; Minimizing a given objective function is the same as generalizing or broadening a pattern based search ... they both are subject to constraining criteria and result in identifying a solution that satisfies such criteria;  $f_x$  is a metric; see Lundahl @ c42:20-32 re networked personal computer).

**Claims 2, 24**

Lundahl anticipates wherein the metric for driving the search is based on a change in value of an objective function (**Lundahl**, c 38:19-54; EN: the objective function is the metric).

**Claims 3, 25**

Lundahl anticipates the metric for driving the search is a sensitivity of an objective function to component moves (**Lundahl**, c 38:19-54; EN: component moves are those characteristics that make up the objective function).

**Claims 4, 26**

Lundahl anticipates determining the effect of a plurality of moves on a set of components (**Lundahl**, c 38:19-54; EN: component moves are those characteristics that make up the objective function); and performing a pattern-based search based on said determining; and outputting a result of said pattern-based search (**Lundahl**, c 38:19-54; EN: component moves are those characteristics that make up the objective function).

**Claims 5, 27**

Lundahl anticipates said determining includes ranking each of said plurality of moves based on the change each move has on an objective function and ordering said moves from highest to lowest ranking (**Lundahl**, c 32:5-22).

**Claims 6, 12, 17, 22, 28, 34, 39, 44**

Lundahl anticipates said ranking includes one of analytically, probabilistically and heuristically ranking (**Lundahl**, c 32:5-22; EN: analytically concerns any numeric process).

**Claims 7, 13, 18, 29, 35, 40**

Lundahl anticipates dividing the range between highest and lowest rankings into a plurality of intervals, and assigning each of the moves to one of said intervals

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(**Lundahl**, c 32:5-22; EN: ¶ 15 applies; moves refer to any change in a variable or metric).

**Claims 8, 14, 19, 30, 36, 41**

Lundahl anticipates assigning is performed according to one of a geometric progression based on said rankings and said rankings themselves (**Lundahl**, c 32:5-22; EN: ¶ 15 applies).

**Claims 9, 31, 43**

Lundahl anticipates determining includes deriving a function that relates moves to changes in an objective function (**Lundahl**, c 38:19-32; EN: moves are synonymous with changes to the objective function).

**Claims 10, 15, 20, 32, 37, 42**

Lundahl anticipates determining includes determining the non-intersecting volume between an object and itself after applying a move (**Lundahl**, c 2:36-55; EN: the non-interesting volume between something and itself is the region excluding something or it is just the cluster).

**Claims 11, 16, 33, 38**

Lundahl anticipates ranking each of a plurality of moves on a set of components based on the effect each move has on an objective function; and ordering the moves within a program for performing a pattern-based search from those moves having the highest ranking to those moves having the lowest ranking (**Lundahl**, c 32:5-22; EN: calibration process).

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**Claim 21**

Lundahl anticipates deriving a function that relates moves to changes in an objective function and organizing the moves within a program for performing a pattern-based search based on said function (**Lundahl**, c 38:19-32; EN: such is the maximizing of the objective function).

***Response to Arguments***

8. The Declaration of Dr. Chandankumar Aladahalli dated February 15, 2007 is acknowledged and the Examiner's response is appropriately recorded in response to the Remarks of applicant's attorney, Edward L. Pencoske in ¶ 9. below.

9. Applicant's arguments filed on February 15, 2007 related to Claims 1-44 have been fully considered but are not persuasive.

**In reference to Applicant's argument:**

With respect to independent claims 1, 4, 23, and 26, each of those claims has been amended to recite performing a pattern-based search and outputting a result of the pattern-based search. The result of the pattern-based search is, as the examiner will recognize, a solution to a packing or component layout problem. Thus, by outputting a solution to a packing or component layout problem, the final result of these claims is useful. There is no question that the result is concrete in the sense of being repeatable. Finally, packing and component layout problems are tangible, real-world problems, and not abstract problems.

Independent claims 11, 16, 33, and 38 have also been amended. These claims are directed to preprocessing activities which are useful in computer programs for solving packing and component layout problems. For example, claim 11 recites ranking each of a plurality of moves on a set of components. Moves are not abstract. Rather, moves represent real-world activities such as translation, rotation, and the like. These realworld activities are carried out on a set of components, which again are not abstractions but, rather, may be cargo, pieces, or parts. Claim 11 then recites ordering the moves within a program for performing a pattern based search from those moves having the greatest effect on the components to those moves having the least effect. It is thus seen that claim 11 is not an abstract



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manipulation of data but, rather, a ranking of moves based on their effect on a set of components, followed by an ordering of the moves within a computer program from those moves having the highest ranking to those having the lowest ranking. Claim 16 is similar to claim 11, except that instead of ordering the moves, the moves are clustered into intervals. Claims 33 and 38 are similar to claims 11 and 16, respectively. It is respectfully submitted that the ability to reorder or cluster moves within a program for performing a pattern-based search is a final result that is useful, concrete, and tangible. Independent claims 21 and 43 have also been amended.

Independent claim 21 is a preprocessing method, and independent claim 43 is a computer-readable medium carrying an ordered set of instructions, which, when executed, performs a pre-processing method. Both methods recite deriving a function that relates moves to changes in an objective function and using that function to organize the moves within a program for performing a pattern-based search. Certainly the Office will recognize that a computer program for performing a pattern-based search is itself something which produces a result that is useful, concrete, and tangible. Claims 21 and 43 are directed to determining an order for moves to be performed within the pattern based search algorithm. Thus, claims 21 and 43 recite subject matter which has as its result controlling or modifying the order in which a pattern-based search is performed. As such, those claims set forth subject matter which is useful, concrete, and tangible.

#### Examiner's response:

¶ 13. applies. The claims and only the claims form the metes and bounds of the invention. Limitations appearing in the specification but not recited in the claim are not read into the claim. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. The results of the subject claims do not represent results that are a practical application since the subject claims are abstract in nature. The claims simply do not relate to the real world. Claims 1, 4, 11, 16, 21, 26, 33 and 43 limit to pattern based search which represent an abstract concept. Outputting a result from an abstract concept results in an abstract result. The applicant may have intentions of limiting to real world applications but the claims as written fail to appropriately capture such concepts. Prior office actions apply.

#### In reference to Applicant's argument:

Lundahl discloses a method and system for the dynamic analysis of data related to consumer choice modeling or quality control programs. (See Lundahl, column 1, lines 24-26, and column 8, lines 43-67). Lundahl's use of X, Y, Z matrixes for storing consumer choice or quality control data is merely a naming convention for the matrixes, and the matrixes have no correlation with the x, y, z axes. Lundahl has

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nothing to do with pattern-based searching, which is the subject matter of the instant application. See declaration of Dr. Aladahalli submitted herewith, paragraphs 5-9. Dr. Aladahalli is at least a person of ordinary skill in the art. See declaration, paragraphs 1-4.

Examiner's response:

¶ 13. applies. The claims and only the claims form the metes and bounds of the invention. Limitations appearing in the specification but not recited in the claim are not read into the claim. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. The appropriate response to the Examiner's office action is to address the specific claim rejections the examiner has made to the applicant's claims. Applicant's claims, as they are written, invite the prior art of Lundahl. Prior office actions apply.

In reference to Applicant's argument:

The Office cites Lundahl, column 39, lines 19-54, and column 42, lines 20-32, as allegedly anticipating claims 1 and 23. The Office reads too much into Lundahl. The examiner's statement is incorrect because Lundahl, at column 38, lines 19 - 54, does not disclose a method for solving packing and component layout problems. The examiner's statement is further incorrect because Lundahl, at column 38, lines 19 - 54, does not describe performing a pattern-based search. Lundahl, at column 38, lines 19 - 54 describes the general problem where the goal is to find the minimum of a given objective function. The cited portion of Lundahl says nothing about the solution to the problem other than the suggestion to use a third-party (Mathworks) routine called SIMPS. The cited portion says nothing about how to solve packing and component layout problems. The cited portion says nothing about what metric is used to drive the search. See declaration of Dr. Aladahalli, paragraphs 10, 11, and 13.

Examiner's response:

¶ 13. applies. The claims and only the claims form the metes and bounds of the invention. Limitations appearing in the specification but not recited in the claim are not read into the claim. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Applicant's claims are so general that when the Examiner further interprets the claims in the broadest reasonable manner, there simply isn't much left to

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cite as a limitation relating the subject application. The Office is not reading too much into Lundahl. The problem is with the applicant's claim limitations. Because of the general nature of the applicant's claims, The Examiner does not have to read much into Lundahl to identify anticipation. Packing and component layout problems are not to be found as limitations of claim 1 (and others) since the body of the claim does not breathe life into the preamble. Minimizing a given objective function is the same as generalizing or broadening a pattern based search ... they both are subject to constraining criteria and result in identifying a solution that satisfies such criteria. A metric can be broadly interpreted as a value meeting some criteria. Prior office actions apply.

In reference to Applicant's argument:

The examiner's position that  $f_x$  is a metric is incorrect.  $f_x$  is not a metric and Lundahl does not use the expression  $f_x$  as a metric. The complete expression is  $f_x : z \rightarrow y$ .  $f_x$  is a function indicating that if the  $x$  variables are held fixed, then some function of the  $x$  variables explains the mapping between  $z$  and  $y$ . See declaration of Dr. Aladahalli, paragraph 12.

Examiner's response:

¶ 13. applies. A metric can be broadly interpreted as a value meeting some criteria. Hence the  $x$  variables of  $f_x$  are metric values...other than step size ... that they are held constant does not disqualify them. Prior office actions apply.

In reference to Applicant's argument:

The applicants finally point out that column 42, lines 20-32, discloses a user interface on a networked computer. There is no mention of any kind of procedure let alone a procedure for performing a pattern-based search, characterized by driving the search with a metric other than step size, such as that required by claims 1 Fund 23. See declaration of Dr. Aladahalli, paragraph 14.

Examiner's response:

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¶ 13. applies. Above discussions apply. Prior office actions apply.

In reference to Applicant's argument:

The Office cites Lundahl, column 38, lines 19-54, as allegedly anticipating claims 4 and 26. The Office's position set forth on page 5 of the Office action again reads too much in Lundahl. Lundahl does not disclose "moves," Lundahl does not disclose "a set of components," and therefore, Lundahl cannot disclose the "effect of a plurality of moves on a set of components." The examiner's statement that "component moves are those characteristics that make up the objective function" makes no sense in the context of the cited portion of Lundahl, because the cited portion of Lundahl does not disclose "components" or "moves" for components. See declaration of Dr. Aladahalli, paragraphs 15 and 16. Accordingly, it is believed that independent claims 4 and 26, as well as dependent claims 5-10 and 27-32, are in condition for allowance.

Examiner's response:

¶ 13. applies. Above discussions apply. The move on the set of components is simply the search routine conducted solely over the z domain to try to minimize an objective function. Applicant is again reminded that the claims are general and are further generalized by the Examiner. Prior office actions apply.

In reference to Applicant's argument:

The Office cites Lundahl, column 38, lines 19-32, as allegedly anticipating claims 21 and 43. The examiner's statements are incorrect because Lundahl does not disclose "moves." Because Lundahl does not disclose "moves," it is not possible for Lundahl to disclose "driving a function that relates moves to changes in an objective function." The examiner's statement that "moves are synonymous with changes to the objective function" is incorrect. "Moves," as that term is used in the pattern-based search field, may or may not result in changes to the objective function. They are not, however, synonymous with changes to the objective function. See declaration of Dr. Aladahalli, paragraphs 17 and 18. Accordingly, it is believed that independent claims 21 and 43, as well as dependent claims 22 and 44, are in condition for allowance.

Examiner's response:

¶ 13. applies. See above discussion. Prior office actions apply.

In reference to Applicant's argument:

The Office cites Lundahl, column 32, lines 5-22, as allegedly anticipating claims 11, 16, 33, and 38. The examiner's statement that "Lundahl anticipates ranking each of a plurality of moves on a set of

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components based on the effect each move has on an objective function; and ordering the moves from those moves having the highest ranking to those moves having the lowest ranking" is incorrect because Lundahl does not disclose "moves." The examiner's statement is incorrect because Lundahl does not disclose "a set of components." Therefore, it is impossible for Lundahl to disclose "ranking, each of the plurality of moves on a set of components based on the effect each move has on an objective function." Furthermore, Lundahl does not disclose "ordering the moves from those moves having the highest ranking to those moves having the lowest ranking." See declaration of Dr. Aladahalli, paragraphs 19 and 20.

Examiner's response:

¶ 13. applies. See above discussion. Prior office actions apply.

### ***Examination Considerations***

10. The claims and only the claims form the metes and bounds of the invention.

"Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

11. Examiner's Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact

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prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

12. Unless otherwise annotated, Examiner's statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

13. Examiner's Opinion: ¶¶ 10.-12. apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Applicant is invited to review the MPEP closely to fully understand how the Examiner will examine an application. In this instant case, the Examiner is not taking the position that the application is not allowable but the Examiner is taking the position that the claims need a substantial overhaul to insure that the prior art of Lundahl and many others, either under 35 USC 102 or 35 USC 103, do not read on the applicant's invention. Applicant's declaration has been reviewed but the applicant need to fully understand that Lundahl is merely a straw man. Beat this straw man down and another will appear. The generality of the claims to include the requirement that the Examiner will still broaden them renders the current set of claims as simply a no starter. Changes the claims and the application can move forward. Leave them as they are and rejections will continue.

***Conclusion***

14. Claims 1-44 are rejected.

***Correspondence Information***

15. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

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Joseph P. Hirl  
Primary Examiner  
March 7, 2007